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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/654,516	09/01/2000	Louise Farrand	MERCK-2155	6056
23599	7590	04/07/2004	EXAMINER	
MILLEN, WHITE, ZELANO & BRANIGAN, P.C.			OH, TAYLOR V	
2200 CLARENDON BLVD.			ART UNIT	
SUITE 1400			PAPER NUMBER	
ARLINGTON, VA 22201			1625	

DATE MAILED: 04/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/654,516

**Applicant(s)**

FARRAND ET AL.

**Examiner**

Taylor Victor Oh

**Art Unit**

1625

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 January 2004.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-6, 9 and 10 is/are rejected.  
7) ☒ Claim(s) 7 and 8 is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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The finality of the previous Office Action has been withdrawn due to new grounds of rejection.

The Status of Claims:

Claims 1-10 are pending.

Claims 1-6 and 9-10 have been rejected.

Claims 7 and 8 have been objected.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 2 and 6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, the phrase "a chiral or achiral alkyl radical" is recited. The expression is vague and indefinite because a compound needs to be shown where it is either in the S or R configuration in a spatial arrangement of the compound when it has a chiral center. Therefore, an appropriate correction is required.

In claim 1, the phrase "a mesogenic group" is recited. The expression is vague and indefinite because the mesogenic group is undefined as to what it is composed of. The specification describes only some mesogenic groups; particularly, an -Phe-Z-

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Phe-, -Phe-Z-Cye-, -Phe-Z-Phe-Z-Cye-, -Cye-Z-Cyc-, etc., in which Z can be -COO-, -OCO-, -CH<sub>2</sub>CH<sub>2</sub>-, -C=C- or a single bond. Furthermore, claim 1 is directed to the compound claim of formula I, which does not show the clear outline of the definite structure or boundary of the claimed compound related to MG compound because the mesogenic group is unspecified. Therefore, an appropriate correction is required.

In claims 1 and 6, the phrases "a polymerizable group" and "polymerizable groups P" are recited. These expressions are vague and indefinite because there are numerous polymerizable groups in the field of chemistry; this does not specify what it is composed of. The specification describes only some polymerizable groups; particularly, an acrylate group, a methacrylate group, a vinyl or vinyloxy group, an epoxy group, a styrene group, or a propenyl ether group or a styrene group, or a propenyl ether group, and etc. Therefore, an appropriate correction is required.

In claim 2, the phrase "a non-polymerizable group" is recited. The expression is vague and indefinite because there are numerous non-polymerizable groups in the field of chemistry; the claim does not specify what it is composed of. The specification describes only some non-polymerizable groups; particularly, an halogen, CN, OCN, NCS, NO<sub>2</sub>, and etc. Therefore, an appropriate correction is required.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

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A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-6 and 9-10 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-17 of U.S. Patent No. 5,723,066. Although the conflicting claims are not identical, they are not patentably distinct from each other because the differences between the instant invention and the claims of U.S. Patent No. 5,723,066 are as follows: In the instant claim 1,  $R^1-MG-R^2$  is described as formula I with broad limitations of its substituents, whereas, in the claim 1 of U.S. Patent No. 5,723,066, a reactive liquid crystal compound is described in the formula III with narrow limitations in the followings:

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III

wherein

$R^1$  is  $CH_2=\overset{\text{COO-}}{\underset{\text{COO-}}{C}}-$  or  $HS-CH_2-(CH_2)_m-$

W is H, Cl or alkyl with 1-5 C atoms;

m is 1-7;

P is alkylene with up to 12 C atoms wherein one or more non-adjacent  $CH_2$  groups can be replaced by  $-O-$ ;

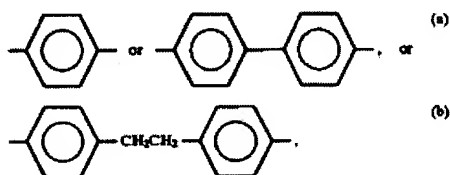
X is  $-O-$ ,  $-S-$ ,  $-COO-$ ,  $-OCO-$  or a single bond;

$R^2$  is an alkyl radical with up to 15 C atoms which is unsubstituted, mono- or polysubstituted by halogen, wherein one or more  $CH_2$  groups can be replaced, in each case independently of one another, by  $-O-$ ,  $-S-$ ,  $-CO-$ ,  $-OCO-$ ,  $-CO-O-$  or  $-O-CO-O-$  in such a manner that oxygen atoms are not linked directly to one another,  $-CN$ ,  $-Cl$  or  $-F$ , or

$R^2$  has one of the meanings given for  $R^1-P-X-$ ;

$A^3$  is 1,4-phenylene or naphthalene-2,6-diyl, in each case being unsubstituted or substituted with 1 to 4 halogen atoms;

$A^4$  is



wherein in each case 1,4-phenylene can be substituted by CN or halogen, and one of the 1,4-phenylene groups in (a) or (b) can also be replaced by a 1,4-phenylene radical in which one or two CH groups are replaced by N; and

The instantly claimed genus of substituents, such as the limitations of  $R^1$ ,  $R^2$ , MG, P, Sp, and X is overlapped with those of  $R^1$ ,  $R^2$ , P, X,  $A^3$ ,  $A^4$  of claim 1 of U.S. Patent No. 5,723,066. Furthermore, with respect to the limitations of substituents, although the rest of the instant claims are broader than those claims of U.S. Patent No. 5,723,066, they are commonly shared the same limitations. Therefore, these differences cannot impart patentability because their scopes are overlapped.

### Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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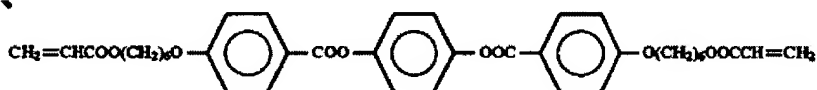
A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

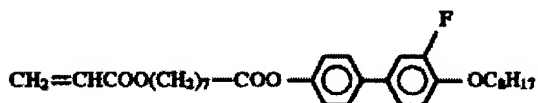
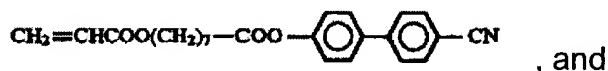
Claims 1-6 and 9-10 are rejected under 35 U.S.C. 102(a) as being anticipated clearly by Coates et al (U.S. 5,871,665).

Coates et al discloses multi-reactive polymerizable mesogenic compounds in the followings:



(see col. 13, lines

54-59),



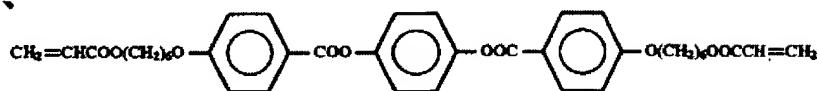
(see col. 15, table 2). They are identical with the

claims.

Claims 1-6 and 9-10 are rejected under 35 U.S.C. 102(b) as being anticipated clearly by Coates et al (U.S. 5,723,066).

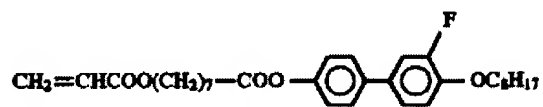
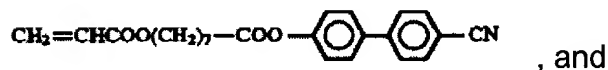
Coates et al discloses multi-reactive polymerizable mesogenic compounds in the followings:

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(see col. 15, lines

5-11),

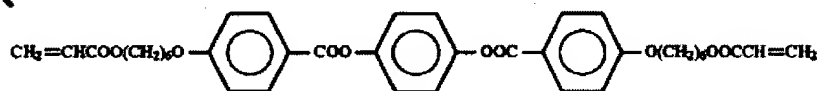


(see col. 15, table 2). They are identical with the

claims.

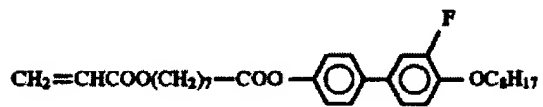
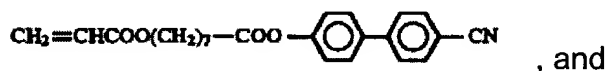
Claims 1-6 and 9-10 are rejected under 35 U.S.C. 102(b) as being anticipated clearly by Coates et al (U.S. 5,746,938).

Coates et al discloses multi-reactive polymerizable mesogenic compounds in the followings:



(see col. 13, lines

44-49),



(see col. 15, table 2). They are identical with the

claims.

Claims 7 and 8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

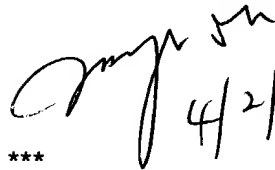


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Taylor Victor Oh whose telephone number is 571-272-0689. The examiner can normally be reached from 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Mckane can be reached on 571-272-0699. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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4/2/04



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GROUP 1200-1625